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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MENEFEE, JAMES A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,764

Applicant(s)

LIU, GANG

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.



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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 0601 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other:

DETAILED ACTION

Response to Amendment

In response to the Preliminary Amendment filed 26 July 2001, page 11 of the specification is deleted. Claims 1-14 are pending.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "20" has been used to designate two different parts in Fig. 1. It is believed that the left most "20" should be -26-.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "26" on page 3, last line. "46" on page 4, 2nd to last line. "90" on page 9 line 7.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "34" in Fig. 1.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 2 is objected to because of the following informalities: The word "date" in line 2 should read -data-. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The method as claimed does not appear to be correct. It is believed that “reactivate” in the last line of the claim should read -deactivate-.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Chambers et al. (US 5,872,624). Chambers discloses a laser driver for generating a beam of coherent light comprising at least two laser diodes 15A,B mounted in combination with a single TEC 92A, and a

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microprocessor 50 for controlling/monitoring the activation of the laser diodes 15A,B and the TEC 92A (Fig. 4, 4A-2 and discussion thereof).

Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Freitag et al. (US 5,999,549). Freitag discloses a method of controlling a laser diode. The control circuit 200 is controlling the laser diode, and since the control circuit is on even when the laser is not it is activated at a current level less than threshold. The laser diode may be activated and deactivated. It is inherent by the definition of the threshold current that when the laser is activated the current through the laser is above the threshold current, and when the laser is deactivated the current through the laser is below the threshold current.

Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Vermeersch et al. (US 6,110,644). Vermeersch discloses a laser driver control circuit containing a MOSFET connected to the input of the circuit (col. 11 lines 48-67). It is not explicitly disclosed that a predetermined polarity will pass while the opposite polarity will turn off the MOSFET switch. However, it is inherent that this will occur, as these responses necessarily occur in the operation of a MOSFET.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freitag et al. (US 5,999,549) in view of Jabr (US 5,594,748).

Regarding claim 2, Freitag discloses a method of controlling/monitoring a laser diode comprising power safety parameters, monitoring the power safety parameters during operation of the laser diode, and disabling the laser diode if the power safety parameters are exceeded (detailed description). It is not disclosed that the system includes a microprocessor and that power safety parameters are stored in a memory of a microprocessor. Jabr teaches a laser driver system where a microprocessor controls the driving of a laser and also stores in memory limits for parameters of the laser diode, that when passed, would cause failure of the operation of the laser (abstract). It would have been obvious to one skilled in the art to include a microprocessor and to store the limits of the parameters in memory of the microprocessor because the microprocessor can control the entire system, and the microprocessor must know when to shut down the laser or sound an alarm, and therefore should know when parameters of laser operation are exceeded, as taught by Jabr.

Regarding claim 3, it is inherent that the operation of the laser diode may be re-enabled upon the occurrence of a predetermined contingency, i.e. when the cause of the fault is no longer present.

Regarding claim 4, Freitag discloses that the safety parameters may be output power and pulse duration (col. 3 lines 25-39).

Regarding claims 5-6, it is inherent that that microprocessor would record the output power and the laser pulse start and stop times, as these are the parameters that are being measured.

Regarding claim 7, it is not disclosed that the microprocessor extrapolates a curve based on the parameters stored in the memory for determining the parameter limits. It is well known that microprocessors may extrapolate a curve using previously known points. It would have been obvious to one skilled in the art that this microprocessor may do so should the parameter limits not be previously given, so that the microprocessor will know what values the parameters may be for proper operation, as is known.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chambers. Regarding claim 8, Chambers discloses a laser driver control system comprising a microprocessor 50, at least one laser driver 20 and a corresponding laser diode 15A. It is not disclosed that the parts are on a printed circuit board or that there is a serial communication between the microprocessor and laser driver. Examiner takes Official Notice that it is well known to place parts of a circuit on a printed circuit board. It would have been obvious to one skilled in the art to include all of the items of the driver control system on a printed circuit board because then all of the parts are organized together, power may be provided to all parts at the same time, and communication between the parts is more easily accomplished than if they were on separate boards, as is well known. While a serial communication between microprocessor and laser driver is not disclosed, it is well known that such communication may be serial, and it would have been obvious to one skilled in the art to make such a serial communication because

then the communication is provided directly from the processor to the driver, as opposed to a parallel connection, as is well known.

Regarding claims 9-10, there is disclosed a TEC, but not a heat sink connected to the TEC. Examiner takes Official Notice that it is well known to include a heat sink with a TEC in laser diode driver type systems because the heat sink will work in conjunction with the TEC in order to accomplish the goal of stabilizing the temperature, as is well known.

Regarding claim 11, there are disclosed a plurality of laser diodes, but not a plurality of drivers. It would have been obvious to include a plurality of drivers rather than the single driver if one wanted to control each of the plurality of laser diodes independently, as is well known.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freitag in view of Jabr, and further in view of Noda et al. (US 6,229,833). Freitag and Jabr teach as in the rejection of claims 2-7 above a laser driver control system comprising a laser diode and a computer monitoring the pulse frequency and duration of the laser diode and means to disable the laser diode if predetermined values are exceeded. There is not taught a comparator for measuring the current through the laser diode and comparing it to a predetermined current, and disabling the system if the current exceeds the predetermined value. Noda teaches in Fig. 1 a laser protection circuit having a comparator that compares the current through the laser to a predetermined current, and disables the current to the laser when the current exceeds the predetermined current (col. 7 lines 5-55). It would have been obvious to one skilled in the art to include such a part so that the laser diode is not damaged by the excessive current, as taught by Noda. There is further not taught a power control loop including the parts of the driver control system where the

microprocessor verifies the operation of the components and disables the laser if any components are not operating. It is well known to disable a laser if it is found that the parts are not operating. It would have been obvious to one skilled in the art to disable the laser if the parts are not operating so as not to damage the laser and its components, as is well known.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JM
July 16, 2002


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